

EFFECT HUMAN CAPITAL; SOCIAL CAPITAL IN THE ERA OF REVOLUTION INDUSTRY 4.0

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ABSTRACT --*The industrial revolution has remained in relation to the third industrial revolution. But the 4.0 Industrial Revolution began to be characterized by the collaboration of several technologies, so that the new era consisted of three fields of independent science, namely physics, digital, and biology. Although the development of the information Technology (IT) today is so fast and rapid, but in this era many institutions and companies have not many who have a system to measure the performance of employees who are accurate and comprehensive, in order to realize prime service according to the vision and strategy of an organization and institution. Faced with the challenges and offset the developments then required a technique or evaluation method for the assessment of employee work, there is one method that is believed when applied in the current era will get maximum results, The method is with the method of measuring IT approach Balanced Scorecard. There is one thing that need to be evaluated is a manual attendance measurement system that is no longer relevant in this era, so it takes some changes in the assessment as it is a program and service model that should provide a lot or Using digital technology (online), various policies and innovations related to performance and service must continue to be carried out and adapted to the conditions of the 4.0 Industrial Revolution.*

Keywords--*Human Capital; Social Capital; Revolution Industry 4.0*

I. INTRODUCTION

As the knowledge side of economic activity is necessary both in terms of human capital and social capital in order to maintain the existence of members and organizations. Knowledge creation of one aspect of innovation (Collinson,2000). It is on the academic enhancement and interests of practitioners in various aspects of knowledge creation and transfer between borders (Crosby 2000). The development of information technology in the era of the Industrial revolution is moving and developing rapidly. Now there are almost no agencies and various layers of society that do not use information technology, ranging from state institutions, private so are companies and communities. To deal with such developments needed a resource such as the device needed in the management of various institutional data, qualified human resources and have the competence to handle the sharing of fields and evaluation methods to assess the development and performance of these organisations and resources. To see the maximum of device resource standards and maintainer resources, it is required a method to measure the progress of a single field of information technology field work, to test it required measuring process Performance and the standard level of equipment used.

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II. LITERATURE REVIEW

a. *Human capital*

Knowledge and capabilities that allow for the change of action and economic growth of individuals as the concept of human capital (Coleman 1998). Human capital can be developed through formal training and education in order to renew and renew one's ability to do good in the community. For example on the impact research of the company how the knowledge in the founding team Intercedes to the high growth rate of the company's star-up (Sandberg 1986)

b. *Social Capital*

There are 2 viewpoints in looking at the social capital is the first sociological view of human action and feel the individual as the main role formed by the community factor and vice versa the economic outlook of human action that perceives the individual as Resources that can be developed and can form environmental factors. Including individuals (Burt 1992), the Organization (Nahapiet and Ghoshal 1998) and the community (Serageldin and Dasgupta 2001). In literature, social capital is a network of relationships or leads to resources that can be used for individual or collective benefit. First, on an individual level the resource is embedded in a person's relationship with others. This emphasis is on actual or potential benefits that a person arises from a formal and informal network relationship with others (Burt 1992). Secondly, at the social capital organization level as a value for an organization in the relationship established by its members for the purpose of engaging in the collective action of Freel 2000). Thirdly, the role of social capital in the creation of human capital in terms of its impact on the welfare of the region or society (Bourdieu 1986, Coleman 1990, Serageldin and Dasgupta 2001. Previous research has also researched the impact of industry structure on regional development and community and explained how ' industrial district ' represents high local configuration in social capital because it is characterized by cooperation, mutual Trust and entrepreneurial spirit as well as with small companies (as opposed to large corporations) with a special competence complement the Saxanian 1994. Conceptual social capital as an organizational feature such as network structure, norms, and trust that facilitates coordination and cooperation for mutual benefit in society. (Putnam 2000)

III. CONSTRUCTS

3.1. *Human Capital :*

Indicators in social capital at the state level are high economic resources; knowledge in adequate society; Supporting physical welfare. More specifically on educational achievement (i.e. between a combination of school years and a level of illiteracy that is averaged), income, age (i.e. life expectancy) on the dimensions of this composite index have a value between 0 and 1 and a reflection of the scale of each state. Example of age 25 years up to 85 years for life expectancy so that the age component for a country is 55 year will be 0.50. The third dimension value is aligned in the overall index. Mean value 80 with standard deviation 15 and Alpha Cronbach 75. If professional and vocational training or specialty experience of the industry is possible as an indicator of human capital. Vocational levels and qualities can improve the productivity and economic growth of the state according to Kalbe Abbas (2005). We found that the relative number of R &D-related professionals is positively

related to its overall level of human capital ($r = 0.14$; $p < 0.001$) and also the dimension 'educational achievement' of our human capital ($R^2 = 0.14$; $p < 0.001$). Building previous research on the country's level of social capital, we measured social capital through assessment of general confidence, institutional beliefs, associational activities, and civil behaviour norms (Knack and Keefer, 1997; Dakhli & De Clercq, 2004)

3.2. Generalized confidence

at a value of 28.6% with standard deviation of 14.0%. In general it can be said that (1) Most people can be trusted or (2) can not be too cautious in dealing with people (Hessel, 2008); (Knack and Keefer, 1997) common belief indicators are the percentage of respondents in each state that select the first option.

3.3. Institutional belief is a measured

belief by asking some of the many beliefs they have in various organizations or institutions. In aligning the values to all (16) items, for example the legal system respondent chose the number of 1 (very concur) for 4 (very disagree). The mean value is 2.47 with standard deviation of 20 and Alpha Cronbach charge 88.

3.4. Associational activity:

An indicator of the respondent's question whether they are active members of various organisations, including professional associations and political parties. Respondents can select a number from 1 (active member) to 3 (not included). From respondents reflects greater associational activity, and prints the highest value Againstall (nine) items. The mean value is 1.24 with standard deviation 22. Cronbach for this size is 94.

3.5. Norm of civil behaviour:

respondents were given the question that there is a list of five types of code that can always be justified, never justified or something in between, the mean value is 8.70 with a standard deviation of 75. However, there is no correlation between items that measure associational activity and significant civil behavior norms and are of different constructions. Then, some researchers argue that exports can increase international competitiveness because they can encourage modernization and living conditions, especially if the focus is on technology-based exports. According to (Kalantaridis and Pheby, 1999) The innovation of many weaknesses and strengths of its dimensions, the Innovation assessment (TN Hansen, 2002) country level there is a combination of three indicators is (1) the first patent amount to be registered in the state for a given year, (2) of high-tech exports and (3) expenditures for Research & Development (Dasgupta, 2001).

3.6 Total Patents:

In the results of the study that patents are more likely to measure the discovery of comparable innovations due to many patented ideas and never being a viable product (Shane, 1992 and HL Williams, 2017). Examples of inventions must be novelty, useful and demonstrate inventive steps that are certainly not for skilled practitioners in the field of technology. Mean value 57.58 with standard deviation 71.26.

3.7. Income gaps:

d Ampak of income gaps do not affect the level of trust among citizens on economic wealth. In addition to the meaning in society with the high social popularization between rich and poor, the domestic group is more willing to charge the community, and tend to hinder from the development economy. Mean value of 25.07 with deviation standard 8.28

3.8. Number of patents:

a lot of ideas are patented and never a viable product (Shane,1992 and B. Sampat and Heidi L. Williams,2019), but the number of patents is a valid size to suppress the state's innovative output due to a valid size To suppress the state's innovative output due to this measure that captures an important aspect of the level of technological activity and the arena some fundamental conditions need to be met to meet patent persaratan. Mean 57.58 with deviation standard 71.26

3.9. Withdrawal for R&D:

Investment level assessment made in R &D sebagai persentase dari GNP negara (Ritsila 1999; Jandhyala. B.G. Tilak,2002). The mean value of this measure in all countries 59 is 1.26%, with standard deviations. 88%.

3.10. High technology exports:

the importance of exporting high-tech products from the country relative to the total exports produced. Some research suggests that the overall state of productivity and competitive posture depends on the ability to drive exports between companies (Berry 1997). The mean value is 12.3%, with a standard deviation of 12.9%.

Table1: Means, standard deviation, ranges, coefficients alpha, and correlations of the variables.

	1	2	3	4	5	6	7	8	9	10
1 Human Capital										
2 Generalizedtrust (%)	.399** (.002)									
3 Institutional trust	-.427*** (.001)	.067 (.613)								
4 Associational activity	-.389** (.004)	-.051 (.711)	.411** (.002)							
5 Norms of civic behaviour	-.048 (.725)	.207 (.120)	.301* (.022)	.094 (.489)						
6 Population (million)	-.321* (.038)	.227+ (.084)	.243+ (.064)	-.018 (.893)	.209 (.115)					
7 Income gap	-.307* (.038)	-.459*** (.001)	.145 (.336)	.210 (.176)	.113 (.458)	.173 (.249)				
8 Number of patents	.461*** (.000)	.472*** (.000)	-.008 (.954)	-.071 (.619)	.244+ (.075)	.027 (.844)	-.261+ (.091)			
9 R&D expenditures (%ofGNI)	.619*** (.000)	.662*** (.000)	-.126 (.394)	.093 (.543)	.155 (.299)	-.122 (.408)	-.464** (.002)	.694*** (.000)		
10 High-techexport (%oftotalexport)	.286* (.040)	.312* (.024)	.421** (.002)	-.059 (.689)	.008 (.958)	.032 (.820)	.057 (.716)	.396** (.004)	.351* (.017)	
Mean	.80	28.55	2.47	1.24	8.70	74.02	25.07	57.581	1.26	12.27
Standard deviation	.15	13.96	.20	.22	.75	202.45	8.28	71.259	.88	12.86
Minimum	.37	5.00	2.07	1.07	5.51	1	13.10	226	.03	.00
Maximum	.96	63.90	3.37	2.27	9.80	1,239	46.60	417.97	3.76	71.00
Alpha	.75		.88	.94	.86					

N=62,***p<:001,**p<:01,*p<:05,+p<:10;two-tailedtests

Table 2: Regression tests

Dependent variable	Number of patents		R&D expenditures (% of GNI)		High-tech export (% of total export)	
H1: Human capital	.410*	.565**	.525***	.724***	.491**	.512**
	(.013)	(.010)	(.001)	(.000)	(.002)	(.005)
H2: Generalized trust	.252 ⁻	-.015	.415**	.035	.083	.081
	(.060)	(.47)	(.002)	(.43)	(.29)	(.36)
H3: Institutional trust	.045	.031	.051	.063	.635***	.713***
	(.39)	(.44)	(.33)	(.32)	(.000)	(.000)
H4: Associational activity	.018	.078	.149 ⁻	.410**	.082	.194
	(.45)	(.35)	(.096)	(.005)	(.25)	(.12)
H5: Norms of civic behaviour	.095	.141	.031	.057	-.365**	-.514***
	(.25)	(.21)	(.39)	(.33)	(.003)	(.001)
Population	.069	.211	7.038	.149	.112	.138
	(.33)	(.16)	(.38)	(.16)	(.22)	(.21)
Income gap		-.223		-.390*		-.112
		(.13)		(.013)		(.28)
Adjusted R ²	.241	.211	.574	.627	.425	.471
F-value	3.642**	2.487*	10.89***	9.901***	6.909***	5.957***
	(.005)	(.037)	(.000)	(.000)	(.000)	(.000)

Coefficients are standardized beta weights. *** p :001, ** p :01, * p :05, + p :10; one-tailed tests. □

IV. RESULTS

The presentation of the coefficient of bivariate analysis is (table 1) very interesting. First, human capital has an influential significant positive with the number of patent submitted, R&D expenditure and high technology exports. Secondly, the general belief and trust of the institution is positively correlated with at least one step innovation. Interestingly, the general belief and institutional belief is no relationship. Eventually associational activism and norms of civil behavior have no relation to each other, which is an indication that the dimension of this social capital is a separate construction. Test multiple regression analyses on hypotheses 1 to 5.

The summary in Table 2 is hypothesized 1 supported, there is a strong positive relationship between human capital with these three steps of innovation. Further partial support is found for hypotheses 2 and 3. General Trust and Institutional trust are positively linked to at least one of the three steps of innovation that generally positively affects the number of patents and the level of R&D. While institutional beliefs have a positive impact on high technology export levels.

The 4 hypothesis is that there is a significant influence of associational activity with R&D expenditure.

5 hypotheses results in negative relations between the civil behavior norm and high technology exports

We also include the revenue gap as a control variable in three additional regression equations and find that the country where prosperity is the more equally distributed score higher on all three steps of innovation, but the effect Only significant R&D expenditure is spent such as the highest level of education, the number of vocational training, one age, and the relevant management or industry experience is the individual human capital measurement measures (Hinz and JungbauerGans 1999, Kilkenny et al.

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